

ones are growing, bearing evidence to its having become fertile and self-perpetuating, as have the other hybrids here described.

Finally, in the herbarium of the Academy of Natural Sciences of Philadelphia there is a sheet of four plants of what appears to be an intermediate between *A. bradleyi* and *A. platyneuron*, a frond from one of which is here shown in figure 13. As this has not as yet been studied in the field by the writer, nothing further will be said about its relationships at this time.

SUMMARY.—Four Appalachian *Aspleniums* have been previously known, and two new ones are here described. Three are regarded as descendants of a northern ancestor, and one of a hybrid between now unknown northern and southern parents, while two are indicated to be hybrids of present-day species, which have however become fertile and self-perpetuating, and are to be classed as independent species.

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New Tropical American Ferns--II¹

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The present instalment contains descriptions of two new tree ferns. One of these is a diminutive *Alsophila* from British Guiana, belonging to a group of half a dozen South American species characterized by having the fronds once-pinnate and pinnatifid, resembling certain species of *Dryopteris*. The other is a Porto Rican *Alsophila* which shows extraordinary range of leaf dissection, fully fertile fronds varying from pinnate-pinnatifid to bipinnate-pinnatifid.

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Alsophila Gleasoni Maxon, sp. nov.

Rhizome undescribed, presumably small and forming a short erect caudex; fronds 65 cm. long; stipe 20 cm. long, slender (2–4 mm. thick above the base), castaneous, armed with scattered blunt straight conical spines less than 1 mm. long, deciduously paleaceous, the basal scales linear-deltoid, long-attenuate from a subcordate base, 5–6 mm. long, bright brown, with narrow, pale, minutely erose-denticulate margins, those above striped, with broad, pale, subfimbriate margins; blades linear-oblong, 45 cm. long, 10–14 cm. broad, long-acuminate in the apical third (the tip attenuate-caudate), pinnate-pinnatifid, the rachis distantly aculeolate toward the base, brown, nonpaleaceous, laxly puberulous; pinnae about 20 pairs, alternate, spreading, approximate, oblong, rounded below (the proximal segment short), abruptly acutish or even obtuse at the apex, 5–7.5 cm. long, 1.5–2.2 cm. broad, petiolulate (1 mm. or less), pinnatisect at base, less deeply cut outward, the costa yellowish-strigose above, bearing a few scattered hairs beneath and an occasional bullate dark brown scale; segments of lower pinnae 10 or 11 pairs, oblong, rounded, distally acutish, subfalcate, 4–5 mm. broad near the apex, the basal 2 or 3 pairs half or two-thirds their width apart, somewhat constricted at base, joined by a long, very narrow wing, subentire to deeply crenate-serrate, those above closer, abruptly decurrent, the wing gradually broader; costule bearing 2 or 3 spinous hairs above, glandular-strigillose beneath; veins 6 or 7 pairs, very oblique, obscurely glandular-strigillose beneath, mostly once-forked; sori small, slightly supramedial, borne upon one or both branches, mostly in the basal half of the segment; receptacle very small, subglobose; paraphyses minute. Leaf tissue herbaceous, dull green, paler beneath.

Type in the U. S. National Herbarium, no. 1,059,473, collected near Rockstone, British Guiana, in dense upland forest, July 15 to August 1, 1921, by H. A. Gleason (no. 830).

A most distinct new member of the small group of pinnate-pinnatifid species of *Alsophila*. From a reading

of the published description of *A. bipinnatifidum* Baker, founded on a British Guiana plant collected by Appun (no. 1032), it might be confused with that species; but a portion of the Appun type, courteously forwarded from Kew, shows that *A. bipinnatifidum* differs in nearly all respects, more especially in its narrower and much longer pinnae (10 to 13 cm.), its more numerous, evenly rounded, and membranous segments (about 19 pairs), its conspicuously hairy surfaces (the hairs of two kinds, short and long, borne freely upon the costules, veins, and leaf tissue on both sides quite to the ciliate margins), its more numerous veins, and its distinctly inframedial sori. The relationship of *A. Gleasoni* with the other members of the group is even more remote.

***Alsophila borinquena* Maxon, sp. nov.**

Rhizome decumbent, 10–30 cm. long, or erect, up to 1 meter high, densely paleaceous at apex, the scales ovate-attenuate, 1–1.5 cm. long, light castaneous, concolorous, lustrous. Fronds several, 1–2 meters long, the stipes olivaceous, distantly muricate or low-aculeolate at base; blades oblong-ovate, 0.5–1.5 meters long, the smaller ones pinnate-pinnatifid only, the larger bipinnate-pinnatifid, the rachis dull olivaceous, smooth, glabrescent; pinnae spreading, stalked, articulate, those of small but fully fertile blades 10–16 cm. long, 2–5 cm. broad, narrowly lance-oblong, long-acuminate, merely pinnatifid to pinnatisect, the segments close, mostly falcate, serrate-crenate, with a single or double row of sori; pinnae of large fronds deltoid-oblong, acuminate, 30–45 cm. long, 15–20 cm. broad, long-stalked (3–5 cm.), pinnate-pinnatifid, the rachis pale olivaceous, unarmed, bearing about 12 pairs of distant pinnules, these stalked, articulate, linear-oblong, long-acuminate, pinnatifid more than half-way to the elevated costa; segments oblong, close, broadly joined, slightly serrate-crenate at apex, the costule bearing 1 or 2 minute, deciduous, light castaneous, ovate-attenuate, bullate scales; veins 7–10 pairs, elevated,

simple or some of the proximal ones acutely forked; sori 6–9 pairs, small, the lower ones supramedial, the others nearly medial; paraphyses short, hyaline; indusial scale wanting. Leaf tissue spongiose-herbaceous or subcoriaceous, lustrous, glabrous.

Type in the U. S. National Herbarium, no. 1,145,551, collected in forest along the Catalina-Yunque Trail, Luquillo Mountains, Porto Rico, at 600 meters altitude, February 23–26, 1923, by N. L. Britton and E. M. Bruner (no. 7571).

The present species is common in Porto Rico, particularly in the Sierra Luquillo, the following additional specimens being at hand: *Britton & Brown* 5441; *Britton & Hess* 2274, 2316; *Cowles* 416; *Dale* 31, 62; *Eggers* 1179, 1223; *Heller* 706, 1075; *Hess* 361; *Johnston* 758; *Shafer* 3230, 3339, 3520, 3613; *Sintenis* 1754, 2588, 4688, 6146; *Underwood & Griggs* 327. The Sintenis numbers were wrongly identified by Kuhn, partly as *A. nitida* Kunze (a species of the Lesser Antilles), partly as *A. gibbosa* Klotzsch, which apparently is restricted to South America. All three species belong to the difficult group of *A. aspera* (L.) R. Br., which will be discussed in a later paper.

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Ferns-Facts and Fancies About Them-V

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Botanists have arranged the great order Filices, or Ferns, into suborders, families, genera, species, varieties and forms. The eight families are distinguished by the way in which the tiny globes (called sporangia) inclosing the dust-like spore atoms burst open to discharge their contents. In the family called Polypodiaceae, to which most of our ferns belong, these globes, themselves as